What is claimed is:

1. A method for determining a downlink delay in communicating packets via a packet-conveying network from a sender to a receiver or an uplink delay for communicating packets from the receiver to the sender, or both the downlink delay and also the uplink delay, or for determining uplink or downlink capacities or both, the method comprising:

a step in which the sender and receiver exchange a first pair of packets consisting of a first uplink packet and a first downlink packet and determine a round trip time for the exchange of the first pair of packets; and

a step in which the sender and receiver exchange a second pair of packets consisting of a second uplink packet and a second downlink packet and determine a round trip time for the exchange of the second pair of packets;

wherein at least either the first and second uplink packets or the first and second downlink packets differ in size.

2. The method of claim 1, wherein the steps in which the sender and receiver exchange a pair of packets are repeated with at least either the first and second uplink packets or the first and second downlink packets differing in size, and the round trip times for the respective exchanges are also again determined, and the sender then determines processed round trip times for each of the exchanges by performing a statistical analysis of the round trip times for the respective exchanges.

3. The method of claim 1, further comprising:

a step in which the sender determines for a packet of size S the uplink and downlink delays D_u and D_d, respectively, using:

$$D_u = S(t_A - t_B)/(s_{uA} - s_{uB}),$$

and

$$D_d = S[t_B - d_r - ((s_{uB} * (t_A - t_B))/(s_{uA} - s_{uB}))]/s_d,$$

in which d_r is a receiver delay indicating a delay between when the receiver receives one of the downlink packets and when the receiver transmits the corresponding uplink packet in response, t_A is the round trip time for exchanging the first pair of packets of consisting of the first uplink packet having size s_uA and the first downlink packet having size s_d, and in which t_B is the round trip time for exchanging the second pair of packets of consisting of the second uplink packet having size s_uB and the second downlink packet having the same size as the first downlink packet, wherein s_uA is different than s_uB.

4. The method of claim 3, wherein instead of the uplink packets in the first and second exchange of packets differing in size, the downlink packets differ in size.

5. The method of claim 1, further comprising:

a step in which the sender determines the uplink and downlink capacities C_u and C_d, respectively, using:

$$C_u = (s_{uA} - s_{uB})/(t_A - t_B),$$

and

$$C_d = s_d/[t_B - d_r - ((s_{uB} * (t_A - t_B))/(s_{uA} - s_{uB}))],$$

in which t_A is the round trip time for exchanging the first pair of packets consisting of the first uplink packet having size s_uA and the first downlink packet having size s_d, and in which t_B is the round trip time for exchanging the second pair of packets consisting of the second uplink packet having size s_uB and the second downlink packet having the same size

as the first downlink packet, wherein s_uA is different than s_uB.

6. The method of claim 5, wherein instead of the uplink packets in the first and second exchange of packets differing in size, the downlink packets differ in size.

7. The method of claim 1 wherein a dynamical quantity is associated with the delay estimates or with the capacity estimates and wherein either the capacities or the delays or both are estimated based on the dynamical quantity using already collected information about the capacities and the delays or both and also using the related dynamical quantity.

8. The method of claim 7 wherein the dynamical quantity is the time of day.

9. The method of claim 7 wherein the dynamical quantity is the time of day and the day of the week.

10. The method of claim 1, wherein at least one of the packets is used to convey information either of use in a predetermined protocol, or of use in determining a receiver delay quantity indicating a delay between when the receiver receives the downlink packet and when the receiver transmits the uplink packet in response.

11. A computer program product comprising: a computer readable storage structure embodying computer program code thereon for execution by a computer processor in a sender device, with said computer program code comprising instructions for performing the steps of the method of claim 1.

12. An apparatus included in a sender device for determining a downlink delay in communicating packets via a packet-conveying

network from the sender to a receiver or an uplink delay for communicating packets from the receiver to the sender, or both the downlink delay and also the uplink delay, or for determining uplink or downlink capacities or both, the apparatus comprising:

means by which the sender and receiver exchange a first pair of packets consisting of a first uplink packet and a first downlink packet and determine a round trip time for the exchange of the first pair of packets; and

means by which the sender and receiver exchange a second pair of packets consisting of a second uplink packet and a second downlink packet and determine a round trip time for the exchange of the second pair of packets;

wherein at least either the first and second uplink packets or the first and second downlink packets differ in size.

13. The apparatus of claim 12, wherein the means by which the sender and receiver exchange a pair of packets repeats the exchange at least once with at least either the first and second uplink packets or the first and second downlink packets differing in size for each exchange, and also again determines the round trip times for the respective exchanges, and then determines processed round trip times for each of the exchanges by performing a statistical analysis of the round trip times for the respective exchanges.

14. The apparatus of claim 12, further comprising:

means by which the sender determines for a packet of size S the uplink and downlink delays D_u and D_d, respectively, using:

$$D_u = S(t_A - t_B)/(s_{uA} - s_{uB}),$$

and

$$D_d = S[t_B - d_r - ((s_{uB} * (t_A - t_B))/(s_{uA} - s_{uB}))]/s_d,$$

in which d_r is a receiver delay indicating a delay between when the receiver receives one of the downlink packets and when the receiver transmits the corresponding uplink packet in response, t_A is the round trip time for exchanging the first pair of packets of consisting of the first uplink packet having size s_uA and the first downlink packet having size s_d, and in which t_B is the round trip time for exchanging the second pair of packets of consisting of the second uplink packet having size s_uB and the second downlink packet having the same size as the first downlink packet, wherein s_uA is different than s_uB.

15. The apparatus of claim 14, wherein instead of the uplink packets in the first and second exchange of packets differing in size, the downlink packets differ in size.

16. The apparatus of claim 12, further comprising:

means by which the sender determines the uplink and downlink capacities C_u and C_d, respectively, using:

$$C_u = (s_{uA} - s_{uB})/(t_A - t_B),$$

and

$$C_d = s_d/[t_B - d_r - ((s_{uB} * (t_A - t_B))/(s_{uA} - s_{uB}))],$$

in which t_A is the round trip time for exchanging the first pair of packets consisting of the first uplink packet having size s_uA and the first downlink packet having size s_d, and in which t_B is the round trip time for exchanging the second pair of packets consisting of the second uplink packet having size s_uB and the second downlink packet having the same size as the first downlink packet, wherein s_uA is different than s_uB.

17. The apparatus of claim 16, wherein instead of the uplink

packets in the first and second exchange of packets differing in size, the downlink packets differ in size.

18. The apparatus of claim 12 wherein a dynamical quantity is associated with the delay estimates or with the capacity estimates and wherein either the capacities or the delays or both are estimated based on the dynamical quantity using already collected information about the capacities and the delays or both and also using the related dynamical quantity.

19. The apparatus of claim 18 wherein the dynamical quantity is the time of day.

20. The apparatus of claim 18 wherein the dynamical quantity is the time of day and the day of the week.

21. The apparatus of claim 12, wherein at least one of the packets is used to convey information either of use in a predetermined protocol, or of use in determining a receiver delay quantity indicating a delay between when the receiver receives the downlink packet and when the receiver transmits the uplink packet in response.

22. A system, comprising a telecommunication network, and a sender device and a receiver device communicatively coupled thereby, the sender including an apparatus as in claim 12.